WHAT IS CLAIMED IS:

1. An inkjet printhead comprising:

nozzles;

firing resisters; and

fire pulse generator circuitry responsive to a start fire signal to generate a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses, wherein the fire pulses control timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles.

2. The inkjet printhead of claim 1 wherein the fire pulse generator circuitry comprises:

pulse width registers for holding pulse width values, wherein the duration of the fire pulses is based on the pulse width values.

3. The inkjet printhead of claim 1 wherein the fire pulse generator circuitry comprises:

counters, each responsive to the initiation of a corresponding fire pulse to count to a corresponding count value representing the duration of the corresponding fire pulse.

4. The inkjet printhead of claim 3 wherein the fire pulse generator circuitry further comprises:

pulse width registers for holding pulse width values, wherein the counters are each preloaded with a corresponding pulse width value and respond to the initiation of the corresponding fire pulse to count down from the corresponding pulse width value to determine the duration of the corresponding fire pulse.

5. The inkjet printhead of claim 3 wherein the fire pulse generator circuitry further comprises:

controllers controlling corresponding counters, each controller providing a corresponding fire pulse and activating a start signal to the corresponding counter to initiate the count, and wherein each counter activates a stop signal to the corresponding controller to terminate the corresponding fire pulse when the count value is reached.

6. The inkjet printhead of claim 1 wherein the fire pulse generator circuitry comprises:

a start fire detection circuit receiving the start fire signal and verifying that a valid active start fire signal is received.

7. The inkjet printhead of claim 6 wherein the start fire detection circuit receives a clock signal having active transitions and verifies that the valid active start fire signal is received by requiring that the active start fire signal is present for at least two of the active transitions of the clock signal.

8. The inkjet printhead of claim 1 wherein an active start fire signal is provided to the fire pulse generator circuitry each time a fire pulse is generated.

9. The inkjet printhead of claim 1 wherein an active start fire signal is provided to the fire pulse generator circuitry only at the beginning of a print swath.

10. The inkjet printhead of claim 1 wherein the fire pulse generator circuitry also controls dead-time between fire pulses in the series of fire pulses in each fire signal.

11. The inkjet printhead of claim 10 wherein the fire pulse generator circuitry comprises:

dead-time registers for holding dead-time values, wherein the dead-time between fire pulses is based on the dead-time values.

12. The inkjet printhead of claim 10 wherein the fire pulse generator circuitry comprises:

dead-time counters, each responsive to a termination of a corresponding fire pulse to count to a corresponding dead-time count value representing the duration of the dead-time between fire pulses.

13. The inkjet printhead of claim 12 wherein the fire pulse generator circuitry further comprises:

dead-time registers for holding dead-time values, wherein the dead-time counters are each preloaded with a corresponding dead-time value and respond to the termination of the corresponding fire pulse to count down from the corresponding dead-time value to determine the dead-time between fire pulses.

14. An inkjet printhead assembly comprising:

at least one printhead, each printhead including:

nozzles;

firing resisters; and

fire pulse generator circuitry responsive to a first start fire signal to generate a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses, wherein the fire pulses control timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles.

15. The inkjet printhead assembly of claim 14, wherein the first start fire signal is provided from a printer controller located external from the inkjet printhead assembly.

16. The inkjet printhead assembly of claim 14 further comprising:

a carrier;

wherein the at least one printhead includes N printheads disposed on the carrier; and

a module manager disposed on the carrier and receiving a second start fire signal from a printer controller located external from the inkjet printhead assembly and providing the first start fire signal representing the first start signal to each of the N printheads.

17. The inkjet printhead assembly of claim 16 wherein the module manager is adapted to receive a serial input data stream and corresponding input clock signal from the printer controller located external from the inkjet printhead assembly and to demultiplex the serial data stream into N serial output data streams and to provide the N serial output data streams and N corresponding output clock signals based on the input clock signal to the N printheads.

18. The inkjet printhead assembly of claim 16, wherein the module manager is implemented in an integrated circuit.

19. An inkjet printhead assembly, comprising:

a carrier;

N printheads disposed on the carrier, each printhead including nozzles and firing resisters; and

a module manager disposed on the carrier and including:

fire pulse generator circuitry responsive to a start fire signal to generate a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses, wherein the fire pulses control timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles of the printheads.

20. The inkjet printhead assembly of claim 19, wherein the start fire signal is provided from a printer controller located external from the inkjet printhead assembly.

21. The inkjet printhead assembly of claim 19 wherein the module manager is adapted to receive a serial input data stream and corresponding input clock signal from a printer controller located external from the inkjet printhead assembly and to demultiplex the serial data stream into N serial output data streams and to provide the N serial output data streams and N corresponding output clock signals based on the input clock signal to the N printheads.

22. The inkjet printhead assembly of claim 16, wherein the module manager is implemented in an integrated circuit.

23. An inkjet printhead assembly, comprising:

multiple inkjet printhead modules, each inkjet printhead module including:

a carrier;

N printheads disposed on the carrier, each printhead including nozzles firing and resisters; and

fire pulse generator circuitry responsive to a first start fire signal to generate a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses, wherein the fire pulses control timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles.

a carrier.

24. The inkjet printhead assembly of claim 23 wherein the fire pulse generator circuitry is integrated into each printhead.

25. The inkjet printhead assembly of claim 23, wherein the each inkjet printhead module further includes:

a module manager disposed on the carrier and adapted to receive a serial input data stream and corresponding input clock signal from a printer controller located external from the inkjet printhead assembly and to demultiplex the serial data stream into N serial output data streams and to provide the N serial output data streams and N corresponding output clock signals based on the input clock signal to the N printheads, and wherein the module manager includes the fire pulse generator circuitry.

26. An inkjet printing system comprising:

a printer controller providing a start fire signal; and

an inkjet printhead assembly including:

at least one printhead, each printhead including nozzles and firing resisters; and

fire pulse generator circuitry responsive to the start fire signal to generate a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses, wherein the fire pulses control timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles.

27. The inkjet printing system of claim 26 wherein the fire pulse generator circuitry is integrated into each printhead.

28. The inkjet printing system of claim 26, wherein the each inkjet printhead assembly further includes:

a carrier;

wherein the at least one printhead includes N printheads disposed on the carrier; and

a module manager disposed on the carrier and adapted to receive a serial input data stream and corresponding input clock signal from a printer controller located external from the inkjet printhead assembly and to demultiplex the serial data stream into N serial output data streams and to provide the N serial output data streams and N corresponding output clock signals based on the input clock signal to the N printheads, and wherein the module manager includes the fire pulse generator circuitry.

29. A method of inkjet printing comprising:

receiving a start fire signal at a printhead assembly, which includes at least one printhead having nozzles and firing resisters;

generating, in response to the start fire signal, a plurality of fire signals, each having a series of fire pulses, by controlling the initiation and duration of the fire pulses internal to the printhead assembly; and

controlling timing and activation of electrical current through the firing resisters to thereby control ejection of ink drops from the nozzles based on the fire pulses.

30. The method of claim 29 wherein the steps of receiving the start fire signal, generating the plurality of fire signals, and controlling timing and activation of electrical current through the firing resisters are all performed in each printhead.

31. The method of claim 29 further comprising:

receiving, at a module manager disposed on a carrier, a serial input data stream and a corresponding input clock signal from a printer controller located external from the carrier;

demultiplexing, at the module manager, the serial data stream into N serial output data streams;

providing, from the module manager, the N serial output data streams and N corresponding output clock signals based on the input clock signal to N printheads disposed on the carrier; and

wherein the steps of receiving the start fire signal, generating the plurality of fire signals, and controlling timing and activation of electrical current through the firing resisters are all performed in the module manager.

32. The method of claim 29 further comprising:

holding pulse width values; and

determining the duration of the fire pulses based on the pulse width values.

33. The method of claim 29 further comprising:

counting to a count value in response to the initiation of a corresponding fire pulse. wherein the count value represents the duration of the corresponding fire pulse.

34. The method claim 33 further comprising:

activating a start signal to initiate the counting step; and

activating a stop signal to terminate the corresponding fire pulse when the count value is reached.

35. The method of claim 29 further comprising:

verifying that a valid active start fire signal is received.

36. The method of claim 29 further comprising:

receiving a clock signal at the printhead assembly, wherein the clock signal has active transitions; and

verifying that a valid active start fire signal is received by requiring that the active start fire signal is present for at least two of the active transitions of the clock signal.

37. The method of claim 29 wherein the receiving step comprises:

receiving an active start fire signal at the printhead assembly each time a fire pulse is generated.

38. The method of claim 29 wherein the receiving step comprises:

receiving an active start fire signal at the printhead assembly only at the beginning of a print swath.

39. The method of claim 29 further comprising:

controlling dead-time between fire pulses in the series of fire pulses in each fire signal.

40. The method of claim 39 further comprising:

holding dead-time values; and

determining the dead-time between fire pulses based on the dead-time values.

41. The method of claim 39 further comprising:

counting to a dead-time count value in response to a termination of a corresponding fire pulse, wherein the dead-time count value represents the duration of the dead-time between fire pulses.